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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/695,645

10/24/2000

John Stevens Merriam JR.

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47549 7590 06/12/2007  
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EXAMINER

PATHAK, SUDHANSHU C

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

06/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

09/695,645

Applicant(s)

MERRIAM, JOHN STEVENS

Examiner

Sudhanshu C. Pathak

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on March 19<sup>th</sup>, 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jan. 24<sup>th</sup>, 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____   | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Claims 1-to-28 are pending in the application.

#### ***Response to Arguments***

2. In regards to the arguments in the amendment dated March 19<sup>th</sup>, 2007 regarding the claim rejection(s) (103) have been considered and are not persuasive, and therefore the rejection has been maintained.

In regards to the specific argument "...the stated term "sub-channeling" is not used in any of the pending claims...", this is incorrect. The examiner agrees that the term "sub channeling " is not explicitly used in the claim language, however the claim discloses "...operating in an upstream band of frequencies that is divided into two or more non-overlapping upstream channels...", which is interpreted as the sub-channeling limitation for which the AAPA reference is used.

In regards to the specific argument that the Krasner reference does not teach "...a down-converter configured to accept a data stream comprising samples of the upstream band of frequencies sampled at a rate of at least twice the frequency of the highest selected frequency in the band and utilizing the selected frequencies to convert each of the two or more non-overlapping channels within the upstream band of frequencies to baseband, the down-converter shifting the said non-overlapping channels to a common baseline center frequency and producing a down-converted output signal for each of the said non-overlapping channels" as presently claimed in claim...", this is incorrect. The Krasner reference discloses "the demodulator 16 in a Headend 12 receiving signals/streams sent from subscriber's transmitter (10) via the

CATV channels. In Fig.3, Krasner et al. teaches the demodulator 16 comprises the A/D Converter 30 digitizing the analog received signals/streams to the digital format (steps D & E); the Filter, and the Down Converter 32 (as the receiver front end); and the Decimator accept (steps A & E) the digitized received signals/streams, then filter, down convert (step B) and decimate (step C) the digital received signals/streams (column 3 lines 60-64) to provide a digital baseband signal (column 3 lines 57-63, the baseband signal has a baseline center frequency) and the Nyquist filter 34 inputs the output of the Filter/Down Converter/Decimator (32) to provide a proper rate digital baseband signal (step C3 to meet the Nyquist sampling criteria).

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that down conversion to baseband frequency implies a 0Hz frequency and the downconversion is to the frequency range of 0Hz to the highest information frequency, hence performing the downconversion in parallel each sub downconversion the baseline center frequency is 0Hz.

In regards to the specific argument that "...the DOCSIS standard does not describe the down-converter presently claimed in claims 1, 25, or 26 or the method of down-converting as claimed in claim 12...", this is correct. However the limitation of the downconverter is disclosed in the Krasner reference.

In regards to the specific argument that "...The Official Action suggests that it would have been obvious as a result of the DOCSIS sub-channeling requirement to equip Krasner's demodulator to be compliant with the DOCSIS standard. K\_rasner provides no indication how such compliance may be achieved and the DOCSIS

standard does not specify how to comply. It is noted that demodulator 16 of Krasner's...", this is incorrect. The Krasner reference discloses a hybrid fiber/coax digital data transmission system including CATV (Fig. 1), wherein the upstream frequency band is in the range between 5-42 MHz (Column 2, lines 40-45). This is analogous to the system implementing a DOCSIS standard as is disclosed in the AAPA (page 2 the first paragraph of background of the invention of the current application). Therefore, it would indeed be obvious to one of ordinary skill in the art at the time of the invention that the receiver as described in Krasner is implemented with the DOCSIS standard so as to facilitate the implementation of data service over HFC cable networks and for the purpose of reducing the interference (as the motivation is provided in the last two sentences of the first paragraph of background of the invention on page 2 of the current application).

In regards to the specific argument that the demodulator as described in Fig. 3 of the Krasner reference employs a single analog signal and the Krasner reference teaches away, this is incorrect. Fig. 3 of the Krasner reference discloses a functional block diagram of a head end demodulator (Column 3, lines 55-58). Krasner further discloses the head end receiving signals from multiple subscribers transmitted in bursts in several frequency channels between the ranges of 5-42MHz (Column 2, lines 40-45 & Fig. 1). Therefore, indeed the Krasner reference does not teach away, and the Fig. 3 shows only a single channel in detail as only an example.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4-6, 11-12, 15-17, 21-22, 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner et al. (US 6,298,098 B I) in view of the admitted prior art (Admission).

Regarding claims 1, 4-6, 11-12, 15-17, 21-22, 25-28 in FIG.1 Krasner et al. teaches a hybrid fiber/coax upstream communication system (column 2 lines 19-21) with a demodulator 16 (details shown in Fig.3) and its method over the bi-direction community antenna television (CATV) cable channels (column 1 lines 13-16), the system comprises the demodulator 16 in a Headend 12 receiving signals/streams sent from subscriber's transmitter (10) via the CATV channels. In Fig.3, Krasner et al. teaches the demodulator 16 comprises the A/D Converter 30 digitizing the analog received signals/streams to the digital format (steps D & E); the Filter, and the Down Converter 32 (as the receiver front end); and the Decimator accept (steps A & E) the digitized received signals/streams, then filter, down convert (step B) and decimate (step C) the digital received signals/streams (column 3 lines 60-64) to provide a digital baseband signal (column 3 lines 57-63, the baseband signal has a baseline center frequency) and the Nyquist filter 34 inputs the output of the Filter/Down Converter/Decimator (32) to provide a proper rate digital baseband signal (step C3

Art Unit: 2611

to meet the Nyquist sampling criteria). Krasner further discloses communicating with a headend is over an optical fiber (Abstract, lines 1-2 & Column 2, lines 35-40 & Fig. 1, element 14). Krasner further discloses communicating with a headend is over a cable television system from a plurality of subscribers (Column 1, lines 13-37). However Krasner et al. does not explicitly show the sub-channeling of Data Over Cable Service Interface Specification (DOCSIS) standard.

The admitted prior art teaches the DOCSIS 37 MHz (5 to 42 MHz) upstream band divided into non-overlapping channels with bandwidths (3.2, 1.6, 0.8, 0.4 or 0.2 MHz) and the non-overlapping channels assigned with center frequencies to avoid interferences (page 2 the first paragraph of background of the invention of the current application). Since Krasner et al.'s demodulator and method are for transmitting and receiving over the cable TV channels to multiple subscribers (Fig.I, column 2 lines 36- 42 wherein there are multiple frequency channels for the upstream communication from subscribers) of a hybrid fiber/coax (HFC) cable network, therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to have the DOCSIS sub-channeling (for the multiple frequency channels) as stated in the admitted prior art to equip Krasner et al.'s demodulator to compliant with the DOCSIS standard designed to facilitate the implementation of data service over HFC cable networks and for the purpose of reducing the interference (the last two sentences of the first paragraph of background of the invention on page 2 of the current application). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention

that an ADC requires a sampling frequency that is at least twice the highest frequency of the band so as to avoid alising and producing the non-alised digital replica of the analog input signal, this is the nyquist criteria.

5. Claims 2-3, 13-14, 20 & 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner et al. (US 6,298,098 B I) in view of the applicant admitted prior art (AAPA) and further in view of Wilson et al. (2001/0051512).

Regarding claims 2-3, 13-14, 20 & 23-24 Krasner in view of AAPA discloses the receiver front end (method) for use in communications system that employees digitally modulated signals operating in an upstream band of frequencies comprising a down-converter and a decimator as described above. Krasner further discloses a decimator associated with the downconverter (Column 3, lines 57-63 & Fig. 3, element 32). Krasner further discloses downconverting the received signal to a baseband signal (Column 3, lines 57-63). However, Krasner in view of AAPA do not disclose down-converter comprises a plurality of down-converters and decimators, wherein each decimator associated with a corresponding down converter, selectively configured to down convert to baseband channel signals the two or more non-overlapping upstream channels centered on the selected frequencies within the upstream band of frequencies in parallel.

Wilson discloses a receiver front end implemented in a DOCSIS communications system for receiving upstream data (Abstract, lines 1-3 & Page 1, Paragraph 6, lines 5-15 & Paragraphs 7-8 & Fig.'s 1-2). Wilson further discloses the front-end comprising a plurality of down-converters, selectively configured to down convert to



baseband channel signals the two or more non-overlapping upstream channels centered on the selected frequencies within the upstream band of frequencies in parallel (Fig. 4, element(s) "Down Converter(1-8)" & Fig. 5, element(s) 507).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Wilson teaches the front-end comprising a plurality of down-converters, selectively configured to down convert to baseband channel signals the two or more non-overlapping upstream channels centered on the selected frequencies within the upstream band of frequencies in parallel and this is implemented in the receiver (method) as described in Krasner in view of AAPA so as to process the multiple channels in parallel so as to increase the speed of the processing in real time and be able to increase the speed of the data transfer.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that since Krasner discloses a decimator associated with the downconverter and therefore, if the downconverters are parallel the decimators would accompany each downconverter. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that baseband frequency implies a 0Hz frequency and the downconversion is to the frequency range of 0Hz to the highest information frequency, hence performing the downconversion in parallel (Claim 2) each sub downconversion the baseline center frequency is 0Hz.

6. Claims 7-10 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner et al. (US 6,298,098 B I) in view of the applicant

admitted prior art (AAPA) as applied to claims 1 and 12 above, and further in view of Tourtier et al. (US Patent 5,446,495).

Regarding claims 7-10 and 18-19, further Tourtier et al. teaches a tree-structure of band splitting in FIG.7 to convert and decimate the channels in the frequency band repeatedly to the baseband for quantization circuits 28 (column 7 lines 20-30). The filter bank SB (26, 27...) performs decimating (column 7 lines 19-25) wherein the band of original data is down converted to sub-bands on lines 1 and 3 by SB 26, then the data on line 1 is down converted to sub-bands 5, 6, and 7 by SB 27, and data on line 3 (bands 1, 2,3) is further down converted, hence the down converting as shown in FIG.7 is in the tree hierarchy. As Krasner et al.'s system modified with the DOCSIS sub-channeling taught by the admitted prior art receiving the multiple frequency CATV channels over the band 5-42 MHz, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the tree-structure TV signal sub- band decoder arrangement taught by Tourtier et al. in Krasner et al.'s demodulator for the purpose to down convert the video/TV signals with different formats in different frequency bands simply and efficiently and be able to process the signals independently (column 3 lines 30-35, lines 40-50).

### ***Conclusion***

**7. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2611

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)-272-3042.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sudhanshu C. Pathak  
Examiner  
Art Unit 2611

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER